Housing-design as a predisposing factor for injuries and poor welfare in cattle within smallholder units in periurban areas of Nairobi, Kenya

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Abstract

A cross-sectional study was carried out between July and October 2009 on 80 smallholder dairy cattle units selected purposively in the peri-urban areas of Nairobi, Kenya. The objective was to investigate the prevalence of body injuries occurring on dairy cows and to determine housing design-linked risk factors associated with these injuries. A total of 306 dairy cows were selected using a simple systematic sampling method. They were examined and injuries recorded according to their body locations which included neck, brisket, carpal, hock, rib-cage, tuber coxae, ischial and teat/udder regions. Housing design-features that served as risk factors for the injuries were also recorded. Associations between body injuries and risk factors were established through chi square statistics at $p< 0.05$ significance level. The highest prevalence of injuries was over the surface of the hock joint [(260/306) 85%], carpal joint [(230/306) 75.16%], rib-cage [(228/306) 74.51%] and tuber coxae [(204/306) 66.70%]. These were followed by other body regions such as neck [(186/306) 60.78%], brisket [(134/306) 43.79%], ischial [(124/306) 40.52%], and teat/udder [(89/306) 29.10%]. Presence of neck rails had a significant association with injuries on the neck (2=20.25, $p<0.0001$) and the brisket (2= 8.14, $p=0.0043$). Height of the neck rails significantly influenced presence or absence of injuries at the neck (2=22.93, $p<0.0001$) and brisket (2=7.37, $p=0.025$) regions. Also found significant were associations between hock region injuries and narrow walk alleys (2=10.68, $p<0.001$), ischial region injuries and poor quality (excessively rough and pot-holed) concrete floors (2=8.86, $p=0.012$). Injuries on the teats and udder were also found to be significantly associated with bare concrete-floored cubicles (2 =12.57, $p=0.014$) as well as with the quality of bedding (2=5.15, $p=0.023$). This study concludes that poor cattle housing designs and the actual finishing quality within the construction caused various body injuries in these zero-grazed dairy cattle in the smallholder dairy units of the peri-urban areas of Nairobi. The effects also resulted in poor cattle welfare. Keywords: cubicle bedding, floor types, neck injuries, skin hyperkeratosis.